

# **RE<sup>3</sup> Workshop**

Renewable Energy & Energy Efficiency

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*Graduate Training and Research at the Nexus of Data Science and Clean Energy – An NSF National Research Traineeship for Data Intensive Research Enabling Clean Technology (DIRECT)*

Discovering new materials that will generate and store renewable energy in a low cost, environmentally benign and scalable fashion is perhaps the most important technological challenge facing society today. All phases of this scientific process – design, synthesis, and characterization – are routinely stymied by the same challenge: researchers are not equipped to handle the deluge of data coming from our labs and high performance computers. This presentation will present a new training model being piloted at the UW and funded by the NSF NRT mechanism. Our program – DIRECT: Data Intensive Research Enabling Clean Technologies – addresses these challenges by training a new generation of energy researchers who are equipped to handle the massive data sets arising from all stages of materials discovery. DIRECT trainees complete a training program primarily comprised of 1) new graduate coursework – a sequence of flipped-classroom style courses that teach Data Science skills in a manner contextualized to clean energy and 2) A capstone project that uses project based learning (PBL) to practice and apply Data Science Skills to challenging real world problems (in conjunction with external partners) in a team-based setting. The thematic focus of the research is next-generation materials for batteries and photovoltaics, but students and projects with wide ranging interest in clean energy are involved in the program.